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ABSTRACT

Nine key findings and major recommendations are listed, relating to state education department administrative policies, local school programs, teacher training, community assistance, and teacher materials. Each of these areas is then discussed in more detail, identifying needs and suggesting ways in which they can be met. Areas of responsibility for a "Conservation Education Service" are suggested. A variety of curricular materials and other resources are reviewed, and suggestions made for provision of more adequate materials. A conservation course suitable for preservice training of teachers is outlined. (EB)

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A REPORT TO THE

CALIFORNIA STATE BOARD OF EDUCATION

BY THE

CONSERVATION EDUCATION ADVISORY COMMITTEE

OCTOBER, 1969

BUREAU OF ELEMENTARY AND SECONDARY EDUCATION

CALIFORNIA DEPARTMENT OF EDUCATION

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(revised Nov. 19, 1969)

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California State Board of Education
721 Capitol Mall
Sacramento, California 95814

August 6, 1969

Dear Board Members:

Throughout our State and nation there is a growing public awareness of the serious environmental and resource use problems facing mankind today. The informed citizen expects his educational institutions to equip youth with the knowledge and attitudes necessary to develop solutions to these problems.

A modern philosophy of conservation is founded upon environmental unity. The problems of uncontrolled growth and development are problems of both the city and countryside. The productivity of our forests and farms can no longer be separated from the productivity and livability of our cities - the downgrading of part of the environment inevitably affects the total upon which all life on the planet depends. Conservation requires the rational use of the physical environment to promote the highest quality of living for this and future generations. Conservation education must be dedicated to achieving an environmental quality in which the individual can make the highest and wisest use of his talents and potentialities.

An informed public working for the common environmental good through its democratic institutions at all educational, private interest and professional levels can break the chain of destructive land use, restore the land which has been abused and build balance and beauty into our cities of the future.

An educational program designed to build such attitudes of stewardship toward maintaining the quality of our common environment enabling citizens to use wisely, not destroy, the resources at their disposal may be defined as conservation education. The Conservation Education Advisory Committee to the State Board of Education was established to determine the status of conservation education in California and to make such recommendations as they consider appropriate. The following report details the work of the Committee and contains recommendations for the consideration of the California State Board of Education.

Members, California State
Board of Education

August, 1969

In your charge to the Committee, which is found in the Appendix, you requested that these specific areas be studied in detail:

1. Teacher training at both the undergraduate and inservice levels.

2. Cooperation with governmental, industrial and private organizations to provide worthwhile printed materials, films, field trips and other resources for teacher and student use.

3. The conservation content of State adopted textbooks.

4. The role of the State Department of Education and Resources Agency in Conservation Education.

5. Recommended school conservation education programs in grades one through twelve.

Since the fall of 1967, the Committee has been holding regular monthly meetings. Early sessions were devoted to gathering materials and reviewing the current status of conservation education in California. During the past six months the Committee has been diligently putting their thoughts and findings into writing in the hope that the recommendations we make will be of value to you in your service to the children and citizens of California.

Membership of the Committee has changed during the period of our deliberations. Of the original membership, only Dr. Samuel Wood was able to serve for the entire time. The present Committee wishes to express its appreciation to these former members who made a contribution to the final report now before you:

David Hurford
Paul McCloskey
Casper Weinberger
Rodney Heft

The Committee as it now stands represents a wide spectrum of conservation interests and has, over the past months, developed into a coordinated, working team well suited to its task.

Two pieces of legislation enacted after the Committee was activated greatly increased the importance of our project. Senate Bill 1, signed into law in 1968, requires that adopted courses of study shall provide for instruction in "protection and conservation of resources" and "man's relationships to his human and natural environment" in appropriate grade levels and subject areas, grades one through twelve (Education Code Section 8503, 8551-c, 8571-b). Senate Bill 206, also

passed in the 1968 session, established in the Department of Education a Conservation Education Service to encourage and assist school districts in developing and maintaining conservation education programs. The bill also authorized the Superintendent of Public Instruction, upon the recommendation of the Conservation Education Service, to make planning grants to local districts to help them develop conservation education programs suited to local needs (Education Code 363.5, 6011.5). Unfortunately, no funds were provided for the services authorized by Senate Bill 206. Senate Bill 1392 was introduced by Senator Moscone in the 1969 legislative session to appropriate $125,000 for this purpose, but the bill died in the Senate Finance Committee.

The resources of education, public agencies, and private conservation organizations must be unified and directed toward improving conservation education programs offered to pupils in the schools of California. Both financial and human resources in generous quantities will be needed if we are to help children develop an attitude of stewardship toward their environment and its resources.

Considering the alternatives - the loss of natural beauty, depletion of resources, and even the loss of the ability of the environment to support life - a major effort is clearly in order. The problem is great and the time is short. Let us act now while there is yet time. The Committee respectfully recommends that members of the State Board of Education carefully study the following report and take action to implement the recommendations it contains.

Sincerely,

Jack Davidson, Chairman
Advisory Committee on
Conservation Education

cc:Rudolph J. H. Schafer
Committee Consultant
Specialist, Conservation Education
California Department of Education

BIOGRAPHIES OF ADVISORY COMMITTEE MEMBERS
Conservation Education

Jack Davidson, Chairman

Mr. Davidson has served as Curriculum Consultant specializing in conservation and outdoor education in the Office of the Los Angeles County Superintendent of Schools for the past fifteen years. He is a founder and past president of the Association for Outdoor Education and is on the Board of Directors of the California Conservation Council and the Southern California Section of the American Camping Association. He holds a bachelors degree and a masters degree from the University of Southern California and has taught at elementary, secondary and college levels.

Peggy Wayburn, Vice-Chairman

Mrs. Wayburn is a free-lance writer and conservationist and mother of four children all of whom attend California public schools or the University of California. She is active in several conservation organizations including the Sierra Club, People for Open Space and the Point Reyes Foundation. She holds a Bachelor of Arts Degree cum laude from Barnard College, Columbia University and is currently working toward a masters degree in ecology. Mrs. Wayburn has served as Associate Editor of Country Book Magazine and as a copy writer for the J. Walter Thompson Advertising Agency of San Francisco. She is a frequent contributor to the Sierra Club Bulletin.

Loren B. Good

Mr. Good presently serves as Executive Vice-President of the Redwood Region Conservation Council and has long been associated with projects and programs involving the cooperation of educators and the business community. He is a member of the Board of Directors of the California Conservation Council and a member of the Education Committee of the American Forest Institute, the national information and education arm of the forest products industries. In addition, Mr. Good has worked as a public relations executive and manager of a community newspaper.

Robert B. Hicks

Mr. Hicks is Project Manager for the Walt Disney Productions Mineral King Development. Mr. Hicks holds an Associate of Arts Degree from the College of the Sequoias, a Bachelor of Science in industrial engineering and a Master of Business Administration from Stanford University. Mr. Hicks has worked as an airlines pilot for Pan American Airways, and as an economist with the Stanford Research Institute. He has also owned and operated a property and land management firm.

BIOGRAPHIES (Continued)

Ray Hunter

Mr. Hunter is presently serving as Director of the California Farm Bureau Federation Natural Resources Department. He served as Director of National Resources for the Illinois Agricultural Association for eight years before accepting his present position in 1958. He holds a Bachelor of Science Degree in agriculture from Western Kentucky University and a masters degree in soil and water management from Iowa State University. Mr. Hunter has also served as a teacher of vocational agriculture and worked for the United States Soil Conservation Service. He has been very active in the Soil Conservation Society of America holding various offices including the national presidency. In 1968 the Society awarded its highest honor, the Degree of Fellow, to Mr. Hunter.

Samuel E. Wood

Dr. Wood is a lecturer and author in the field of conservation and a consultant to California Tomorrow, an organization he co-founded and served many years as executive director. He received his Ph. D. in economics and political science from University of California at Berkeley in 1940 and has worked for the U.S. Department of Agriculture, Bureau of Reclamation, U.S. Department of Interior and as a legislative committee consultant, California Legislature. In addition, Dr. Wood has taught at the college level and has prepared regional and statewide developmental plans for California, New Mexico, the Province of Manitoba, Canada and several California communities. He has prepared many articles and reports and is joint author with Alfred E. Heller of the California Tomorrow Publications California Going, Going (1962) and The Phantom Cities of California (1963)

Paul Zinke

Dr. Zinke is an Associate Professor of Forestry at the University of California and has published thirty-four technical works on soils and forestry and fifty-eight quadrangle maps classifying soil and vegetation in several areas of California. Dr. Zinke received his Ph. D. from University of California, Berkeley in 1956 and has worked for the U.S. Forest Service. He is a director of the California chapter of the Soil Conservation Society of America, a director of the California Native Plant Society, served as a member of the Conservation Committee of the Sierra Club and has served as chairman of the California section of the Society of American Foresters.

Jane Westenberger

Miss Westenberger graduated with honors and a Bachelor of Arts Degree from Long Beach State College and later earned a Master of Arts Degree

graduating "With Great Distinction". She holds life credentials in elementary and secondary teaching and general school administration. She is very active in many conservation associations and was a recipient of the Merit Award from California Conservation Council and Howard Bell Award for contributions in outdoor education from the Association for Outdoor Education, Inc. She is a former member of the Governor's Advisory Committee to Public Land Law Review and past State president and board member of the Association for Outdoor Education.

William Wake

Dr. Wake is an Associate Professor of geography at Fresno State College, Bakersfield Center. He received his Ph. D. from University of California at Los Angeles and founded the organization Conservation Education Research Action (CERA) in Bakersfield. He has several publications to his credit in the geography and conservation fields and serves as director of the California Conservation Council, the Director of the Consortium of Professional Associations for the Study of Special Teacher Training Programs and is third vice-president of California Conservation Council and a member of the State Advisory Board of the Bureau of Land Management.

Rudolph J. H. Schafer, Committee Consultant

Mr. Schafer is employed by the California State Department of Education as an ESEA Title V Project Specialist in Conservation Education. He is a graduate of the University of California at Santa Barbara, and holds a Master's Degree in School Administration from the University of Southern California. He has been a classroom teacher, assistant principal, Public Information Officer, and Specialist in Conservation Education in the Los Angeles Unified School District. In addition, he has served eleven summers as a seasonal ranger for the National Park Service. He is a Director in the California Conservation Council, and has received a merit award from that organization.

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THIS WE BELIEVE:

Most educators and politicians are lagging far behind public thinking on conservation.

For the past quarter century or more, both groups have been too preoccupied with other issues they believed were more urgent.

Neither has yet made a serious effort to keep the conservation concept abreast of man's technology and his awesome ability to defile, pollute, poison and destroy his own habitat.

This, although the electorate in a recent statewide public opinion poll ranked the problems of natural resource conservation as more urgent than those of crime and law enforcement, poverty, race relations and education.

And despite voting proof that most Californians of all income groups, while dead set against tax increases for anything else, are willing to pay additional taxes earmarked to save or improve their natural surroundings.

What barely missed becoming landmark legislation in the field of conservation was passed and signed into the State Education Code in 1968. It requires, for the first time in history, that California schools, from first grade through high school, provide instruction in natural resource conservation and man's relation to his environment.

The Act fell short of its mark because support funding was not provided to carry out the program. Program funding, or the lack of it, is a fair measure of the seriousness of legislative and administrative intent.

Without long-term funding, without specially trained teachers, without needed materials and meaningful outdoor study opportunities, conservation education remains a stepchild in the crowded family of public education. A bright and promising child, but ignored or neglected, with little nourishment of any kind.

Meanwhile, the battle for wise use of California's natural resources is still being lost on virtually every front. Each succeeding day diminishes the ability of our environment to renew the meaning and the worth of living.

Sound solutions to California's conservation problems must involve total resource management supported by an informed public and responsive government.

Basic to the solutions is a public with a conservation conscience--aware of what is theirs, aware of the values and choices, and sensitive to the needs of generations yet to come.

Adulthood, with its fixed beliefs and special interests, is anything but fertile ground for growing unbiased attitudes. If we are to have a valid California conservation conscience we must grow it in the open, searching minds of childhood and youth.

Conservation education woven into the total fabric of our school system is the key. But, to be effective, conservation education must be adequately funded and provisioned, and taught with skill and understanding.

Thousands of teachers with no conservation education background must be provided the pre-service and in-service training they will need. Every effort must be made to make these courses as effective as possible for the quality of the teaching will determine the quality of the results.

Local, state and federal resource lands are available statewide as outdoor study areas to augment and complement those on school grounds. Legislative grants must be provided to assist in developing such school ground areas and to provide bus transportation to distant environmental study areas.

We who have already short-changed tomorrow can hardly do less.

Today's youth, in search of the great natural heritage of its forebearers, has good reason to be disquieted. Man's obsessive assault on California stands out in bold relief.

The time is late, but a fresh start must be made toward developing an informed conservation conscience for California.

If the State is to provide leadership rather than lip service before it is too late, the time to act is now.

SECTION I

KEY FINDINGS AND MAJOR RECOMMENDATIONS

THE DEPARTMENT OF EDUCATION

1. FINDING:

Senate Bill 1, 1968 (Education Code Sections 8503, 8551-c and 8571-b) requires that adopted courses of study provide for instruction in conservation and use of natural resources in all California Schools, grade one through twelve. Senate Bill 206, 1968 (Education Code Section 363.5) created without funding, a Conservation Education Service in the Department of Education.

RECOMMENDATION:

Recognizing that the effectiveness of the program is directly dependent upon the funding provided, the State Board of Education should direct the Department to make every effort to provide adequate funding for the Conservation Education Service created by the legislature for the purpose of assisting local districts in meeting conservation education requirements of the Education Code. (Section VII)

2. FINDING:

To be effective, the conservation education service in the Department of Education must be adequately staffed and must be in close contact with the schools as well as with governmental agencies, industry and private conservation associations.

RECOMMENDATION:

The Committee recommends that the Department of Education assign a fulltime consultant to the Conservation Education Service, and that a permanent advisory committee representing various conservation and education interests be appointed to assist and advise the Board, and the Department of Education on Conservation education matters. (Section VII)

3. FINDING:

In meeting their obligations in the conservation education field, local school districts and county offices need materials and guides to assist them in planning programs suited to local needs. The production of such materials is often beyond the resources of local school districts and County offices.

RECOMMENDATION:

The Committee recommends that the Department of Education, through the Conservation Education service, develop a conservation education outline or framework listing essential concepts and showing possible curricular applications in many subject areas and grade levels to assist local school districts in preparing educational programs suited to local needs. Such a framework will be necessary if the conservation implications of the proposed social sciences framework are to be properly taught. The Committee also recommends that other guides, catalogs, and materials which would be of value in local program planning be prepared by the Department and distributed to the schools. (Section VII)

LOCAL SCHOOL PROGRAMS

4. FINDING:

Sections 8503, 8551-c and 8571-b of the California Education Code require that adopted courses of study shall provide for instruction in ". . .protection and conservation of resources . . ." and in ". . .Man's relations to his human and natural environment" at the appropriate elementary and secondary grade levels and subject areas. The language of the law clearly indicates that conservation should be taught, not as a separate subject, but throughout the entire curriculum whenever and wherever possible, grades one through twelve. In addition to a strong classroom program at all grade levels conservation education must include first-hand experiences with the natural world. School districts often lack adequate funds and facilities to provide such outdoor experiences.

RECOMMENDATION:

The Committee recommends that the State Board of Education urge local boards of education to provide for the strong implementation of the provisions of the Education Code relating to conservation. Such local implementation should include:

- development of a strong local conservation education policy statement

- production of locally oriented curriculum guides and other material necessary to properly teach conservation in appropriate grade levels and subject areas throughout grades one through twelve

- the establishment of a required conservation course at the secondary level to re-emphasize and tie together the conservation concepts studied in lower grades

- the establishment of permanent outdoor study areas on school grounds or elsewhere in the district or community

- provision for educational school journeys to study natural and man-modified environments when such experiences are indicated in the curriculum.

The State Board of Education should urge local, state and federal land and resource management agencies to make their land areas and facilities available for school use and assist educators in setting up worthwhile programs. (Section III)

5. FINDING:

Providing funds for the development of natural study areas on school grounds and other conservation education areas within a school district, as well as funds for pupil transportation to outdoor areas, is a serious problem for many school districts.

RECOMMENDATION:

The Board of Education should urge the legislature to provide the funding necessary to assist school districts in meeting these needs. Districts should be required to meet state established minimum program standards to receive such funds. Planning grants authorized under Section 6011.5 of the Education Code could be used to assist districts in developing such programs. (Section III)

6. FINDING:

The resident outdoor school in which students and their teacher spend two or more days in a natural study area learning about their environment under the direction of specially trained teachers has been found to be a most effective means of teaching conservation. Although many districts offer such a learning experience and many more are planning to do so, not nearly enough students are permitted to participate in such a program.

RECOMMENDATION:

It is recommended that means be provided to greatly expand outdoor education programs in California. Specifically, these areas of encouragement should be explored:

- State supported and State operated outdoor schools on public land.

- Special outdoor education funds from the legislature, perhaps in the form of revenue bonds to build outdoor education resident school facilities on public lands.

- Enabling legislation to permit local districts to levy special taxes for outdoor education programs. (Section III)

TEACHER TRAINING

7. FINDING:

A well-trained teacher is the key to a successful local conservation education program. Teachers must be convinced of this and must be instructed in the philosophical, scientific, technological and social aspects of conservation. In addition, they must be given instruction in the specific techniques of teaching conservation at their particular grade level and subject area. Such instruction is not generally provided in undergraduate programs at present and most of the teachers now teaching lack these skills, knowledge and attitudes.

RECOMMENDATION:

The Committee recommends that the Board of Education urge all appropriate agencies to set up programs to instruct teachers and teacher trainees in the philosophy, principles and content of conservation as well as in specific conservation teaching techniques.

Preservice Training:

Preservice teacher training must include as a minimum, one three unit course in the philosophy, politics, economics and sociology and ecological aspects of conservation. This course should also provide the prospective teacher with a knowledge of how to integrate conservation instruction within the various subject areas and grade levels as required in Section 8503 of the Education Code as well as with specific instructional techniques for teaching conservation. It is recommended that such a course be a requirement for graduation. (A suggested outline for such a course is contained in the appendix, pages 41-47.)

It is also recommended that other courses in the preservice curriculum include the conservation concept where appropriate.

Inservice Training:

Providing conservation inservice instruction for a large percentage of teachers in California will be a major undertaking, but the Committee feels that such instruction is essential. The following recommendations will expedite such a program:

- Institutions of higher learning should be encouraged by the Department of Education to provide suitable summer session classes for teachers.
- The Department of Education, governmental resource agencies, industry and private conservation groups should combine forces to provide summer or weekend conservation classes for teachers.
- The active support and cooperation of county school offices should be sought by the Department of Education in planning and developing inservice programs.

- Local districts should give teachers salary-point credits or other compensation for attendance at conservation inservice classes.

- All courses should utilize the outdoor environment when appropriate. (Section IV)

COMMUNITY ASSISTANCE

8. FINDING:

Private conservation agencies, industry and governmental resource agencies can make many valuable contributions to the conservation education effort and are, for the most part, anxious and willing to be a part of this important work. Printed materials, films, speakers, technical information, field trips and other services are available from these sources.

RECOMMENDATION:

The Committee recommends that the Board of Education and educators throughout California recognize the benefits to be gained from the various areas of conservation interest and welcome their contribution to the conservation education program. Specific steps which should be taken to expedite such cooperation should include:

- close cooperation between local educators and the various resource management and conservation agencies in the community.

- close cooperation between Conservation Education Service in the Department of Education, and these agencies and organizations in developing and implementing a statewide conservation education program. (Section V and Section VII)

TEACHING MATERIALS

9. FINDING:

Well-trained teachers must have good classroom teaching materials if the conservation education program is to be successful. High quality textbooks, supplementary books, film strips, picture sets, motion pictures and other materials are not presently available in adequate supply in most California schools.

RECOMMENDATION:

The Committee recommends that the following action be taken to provide needed conservation teaching materials:

- The Board of Education should direct the Curriculum Commission to require a strong emphasis on conservation when appropriate in all state adopted textbooks.

- The Department of Education, through the Conservation Education Service should continue and expand the studies of free and inexpensive conservation education materials begun as a part of the Advisory Committee project and should make these studies widely available to educators.

- The Department of Education, through its Conservation Education Service, should encourage the production of worthwhile conservation education materials, and should encourage an emphasis on conservation in a wide variety of subject matter fields. (Section VI)

- A central library and repository of conservation education materials from private conservation groups, from industry, from professional, scientific and governmental sources should be established at the state level.

SECTION II

BASIC PHILOSOPHY AND DEFINITION OF TERMS

In all nations there is a growing awareness of the serious environmental and resource utilization problems mankind is facing--problems which must be resolved if man is to continue living on this planet. Poor land use, pollution of many kinds, and a shortage of many essential resources are only a few of the problems we have created for ourselves through past mistakes. The actions of each individual and of all groups affecting natural resources and the quality of the environment is the concern of all.

Throughout the world, population increase is matched only by the march of people into the cities. California will have almost twice as many people as today by 1990, with 90 percent of them in metropolitan areas. We not only have more people than any other state, we are also more urbanized. Under present trends, the major portion of these people will settle, at least initially, in the suburbs of existing urban regions on the state's best agricultural lands.

California's growth has been so rapid and uncontrolled that the increasing stress on our limited resources of land, air and water has made this state the world's primary battleground for restoring and maintaining the quality of its unmatched former beauty and productivity.

California may still look good to her recent arrivals. But to those who have lived here several years, the depth of change is clear indeed. Quiet streets have become snarled thoroughfares. Well-kept neighborhoods have faded into decay and disrepair. Verdant fields of alfalfa and groves of orange trees have given way to boxlike houses and acres of blacktop. Over use of resource areas has created recreation slums that desecrate the land by the destruction of its recreation value. The air has become gray and stinky.

The contrast between city pollution and ugliness and country beauty and purity is less apparent. Both cities and counties know the cost of sprawl and ugliness, the pollution of our land and landscape. The high priority problems, such as loss of open space and agricultural land to urban growth, the over use of recreational resource areas, and air and water pollution are problems for both the city dweller and the farmer. The productivity of our forests and farms can no longer be separated from the productivity and livability of our cities.

In spite of some recognition of this basic unity of the environment, we massively tamper with the world of nature without concern for the biological results until they irreversibly force themselves upon us. The pollution of the landscape pyramids the dangers of air and water pollution as open space and open water are covered over with the slurbs and

filled in with garbage. Air, chemical and water pollution move on our waters to the ocean where they threaten the life cycles of fish and the marine micro-organisms which produce seventy per cent or more of the world's photosynthetic oxygen. The loss of open space land to urbanization increases the threat to the delicate carbon-oxygen balance on which all life depends. Air pollution not only endangers all life but destroys the state's beauty and productivity. The downgrading of part of the environment inevitably affects the total.

If these facts are cause for alarm and population projections to the turn of the century are at all near the mark, the forces of economic progress will place heavier pressures on the environment -- more crowding in the cities and on the highways, less unspoiled open space of woodland and shoreline, more fumes from factory and motor vehicles, more family and factory waste to be eliminated.

CONSERVATION

We define conservation as the rational use of the physical environment to promote the highest quality of living. This definition encompasses the major human concerns of this generation: the destruction of amenities, blight in our cities, pollution of our land and landscape, our air and water, loss of physical and mental health. These concerns of conservation immediately involve persons of all ages because they are the vital stuff of homes, neighborhoods, cities and countrysides. Conservation and conservation education applies to the total environment with man himself as the subject. People must come to realize that dirty rivers, polluted air, unkempt landscape need not be the price we pay for industrial progress and economic growth.

This definition places man under a moral obligation to understand the world in which he lives and to protect, enhance and make the highest use of the land and resources he holds in trust for future generations. In view of the importance in which the Committee holds the human resource, we believe that the primary goal of conservation education should be the creation of an environment in which the individual can make the highest and wisest use of his talents and potentialities. Education is charged with the primary responsibility for developing this human resource.

It is our conviction that the proper utilization of resources will secure for man the following benefits:

- A sufficiency of products to make his life useful and self-satisfying. These products enable man to fulfill his needs in respect to food, shelter, transportation, communication, and other necessities and comforts of life.

- An environment the quality of which will inspire the highest and wisest development of his potentialities without subjecting him to the hazards of water contamination, air pollution, excessive noise, urban crowding and other such consequences of poor resource development and utilization.

- An aesthetically pleasing environment in which natural and man-made beauty, historical and recreational resources are available to all.

- The assurance that these benefits will be available to those who will live on earth after us.

The Committee realizes that such a philosophy involves careful planning and orderly development. We do not have all the answers, but we need now to use the knowledge we have to plan for a future based on an understanding that allows for harmonious living with nature. This planning and our survival can only be achieved through education at all levels from kindergarten to retirement. The ecological principles on which man's future depends must be understood by all professions, by public and private resource management people, by politicians and employees.

Such a philosophy of development and planning for highest and wisest use implies that there are choices to be made. Who is to make these choices? We feel that all citizens should be given the opportunity to participate in this decision-making process. This calls for an electorate informed on the issues and working through government and other social institutions, to insure that the wisest possible decisions are made.

CONSERVATION EDUCATION

We define conservation education as the means of achieving an educational philosophy that will help each student develop a healthy attitude of personal responsibility toward his environment and its resources, and to provide him with the concepts, the knowledge and skills needed to contribute validly to the decision-making process on issues involving the environment and its resources. In all grade levels, environmental facts should be taught as they relate to each other, not as isolated bits of information. Children should become aware of the interrelated nature of living processes. Conservation is not an isolated subject and, therefore, cannot be dealt with in a vacuum. It deals with the scientific and long-term management of biological systems for human benefit. Conservation education requires understanding of all environmental and socio-economic systems and their relationships. Forest management and related land use, for example, can then be placed on a sound and enduring basis so that man can both use and retain his rich heritage of natural resources.

The Committee recognizes that the enlightened conservation conscience we are seeking to develop cannot be created by a single course offering,

but must be developed progressively throughout the entire school experience. State law now requires conservation instruction in grades one through twelve. We would further suggest that an understanding of the interrelationships of nature be included in pre-school and headstart programs whenever possible. It is also important that conservation instruction be carried on in vocational training schools and colleges. Although the major subject areas in which conservation concepts would be stressed would be the natural and social sciences, the possibilities for integration into other subject areas should be fully exploited.

This discussion of conservation education presupposes an informed teacher. The committee recognizes one of the greatest problems in the field of conservation education today is the teacher who has little or no knowledge of the field. Therefore, we consider preservice and in-service training to be the cornerstone of any effort to upgrade conservation education.

The recommendations made here look forward to an electorate that will dedicate its efforts to healing the scarred land, protecting our great natural beauty, enhancing and preserving the amenity of neighborhoods and building balance and beauty into the cities of the future.

Massive educational programs for teachers and students, equal in weight to the present and projected assault on our resources and the quality of our environment, is the purpose of this report. There is little time remaining to solve these problems, This committee sees no miracle panacea nor technological breakthrough on the horizon. An informed public working for the common environmental good through its democratic institutions, while there is yet time, can be the only answer. Our society, our governmental structure, our environment, our community values and ambitions are only as good as we, the members of that society, choose to make them.

SECTION III

THE SCHOOL PROGRAM

General Considerations

The basic goal of any conservation education program should be the development in students of an understanding of their environment and a feeling of personal responsibility for maintaining its quality. Unfortunately people often speak of conservation as something others should be doing, when really it is something everyone must practice if we are to continue living on earth with any degree of health and comfort.

One of the shortcomings of past conservation education programs was that the emphasis was placed on resources and problems far removed from the student. The farmer caring for his soil, the forester carefully managing the forest were, and still are, important concepts to which children must be exposed, but what of the student's immediate environment and his personal relationship to it?

For more than 90 per cent of all Californians, "immediate environment" means an urban area. Thus, to be truly relevant to the majority of our citizens, a study of conservation must include consideration of urban as well as rural ecology. As children develop, their interests and awarenesses grow from the immediate environment of the bassinet to the home, the community, the state, the nation, the world, and finally the universe. A child's conservation conscience should likewise develop as a part of this ever-expanding sphere of interest and knowledge. He should be shown each step of the way how he personally relates to his own environment so that he might learn to put his own ecological house in order before going forth to save the universe.

Another shortcoming of past conservation education programs was the all too common practice of studying resources as if they existed separately. For example soil, water, animals, and plants, were studied as if each existed in a vacuum. Seldom did earlier conservation studies deal with the interrelationships of resources or with the interdependencies between man and the resources. If children are to develop adequate conservation consciences, their knowledge about the world must include awareness and understanding of ecological relationships and the effect of human activities upon these relationships.

The Committee recognizes that conservation is basically a social concept. Decisions regarding man's use of the environment must be based on economic feasibility, social acceptability and political reality. The findings of the so-called pure sciences provide needed information and knowledge about the world, but decisions concerning actions to protect, utilize, and preserve the environment and its resources are a function of society and must be studied in the social sciences and humanities curriculum. Because of the possibility of controversy in dealing with social

and political matters, extreme care should be used in developing conservation education programs to avoid the danger of making the classroom a "soap box" for any one point of view.

In general, then, school programs must provide conservation experiences in many subject areas throughout the entire school curriculum and in every grade level. We would Hope that each graduating student will have a thorough grounding in basic ecology, resource technology and the social sciences as they relate to resource and environmental problems upon which to base a personal conservation ethic. These experiences must deal with the environment in an integrated way and must be as relevant to modern urban dwellers as to rural students. Varied programs to meet the needs of a varied population must be designed. Of particular significance in a good conservation education program is the utilization of the environment outside the classroom. Such experience need not always be of an extended "field or study trip" nature to be of value. Neighborhood nature study walks and short trips to study a local conservation problem such as a polluted stream, a badly eroded hillside, a smoking factory, or an area of urban blight can be most effective. Good examples of wise-use resource development and management should also be sought out and studied.

An extended outdoor study experience can also be a very effective part of a total conservation education program, particularly when it is closely related to the ongoing classroom activities. Such an outdoor program, among other benefits, provides children with an ecological baseline or point of reference which they will find necessary in evaluating the various environments which man has modified. Resident outdoor schools and other field study experiences should ideally include study of mountain, seashore, desert, agricultural, and urban environments. Existing programs of this type should be expanded and new ones encouraged with financial assistance from the state. A natural study area on a local school site can be a most effective conservation teaching device. A number of school districts are establishing such areas, and it is hoped that this trend will continue. Ideally such areas should be included in the master architectural and landscaping plan of a school.

Finally, an effort must be made to enable children to practice conservation throughout the entire educational process. The most elaborate and expensive program imaginable is valueless unless it creates the desired behavior patterns in children. Some suggestions to build such behavior patterns are:

- Encourage children not to waste food, supplies or other materials.
- Encourage children to help keep their immediate environment (school, home, neighborhood) clean, neat and attractive.
- Help students to discover if they might be a source of environmental pollution. If so, discuss remedies.

- Encourage student organizations to participate in local environmental improvement or conservation programs.

- Encourage students to contact industry, government agencies, and private conservation organizations for information on specific conservation problems.

- Encourage high school or junior college science students to act as guides for nature study field trips for elementary students.

DEVELOPMENT OF THE LOCAL PROGRAM

A good school program in conservation must be integrated in all appropriate subject areas in the curriculum at all grade levels. The sciences can provide factual knowledge to help the pupil understand the complexities of the natural world, while the social sciences can provide the means to understand the political, social, and economic aspects of conservation. A study of the social sciences also helps the pupil understand the democratic processes through which individuals can work together to preserve and enhance their environment. An excellent curriculum must integrate the ideas and concepts from the various subject areas in such a way as to help each pupil fully understand and appreciate man's interrelationships and dependence on the material world. Other curricular areas such as practical arts, mathematics and language arts offer conservation teaching possibilities. In particular, the humanities should be utilized to sharpen the child's natural awareness for beauty so that he may seek to preserve and perhaps create beauty in the natural and urban environments.

In addition to the inclusion of conservation concepts throughout the regular school program, a special course at the secondary level to tie all of the various concepts together should be required for all students.

Concepts and knowledge from a great variety of subject areas should be utilized in developing conservation education units, guides, and other teaching material. The State Department of Education, colleges and universities, county and district personnel should provide the expertise required to develop such materials. A good program should include instruction about the basic principles and techniques of resource management and environmental control which will enable people to initiate and support wise environmental management activities. A close working relationship between educators and persons in positions of responsibility in resource utilization and management is essential in devising educational programs to secure these understandings.

CONSERVATION EDUCATION FRAMEWORK

A good conservation education program should be based on a conceptual framework or set of guidelines. With the increasing wealth of knowledge available today, imparting only information to students is both impracticle and impossible. Effective instructional programs in any field must deal with major ideas, principles and concepts. This is particularly true in the field of conservation. Concepts provide scope and sequence, while facts and information can be chosen to suit local situations. Instructional materials can pinpoint opportunities for teaching conservation at various grade levels and in various subject areas.

A state-recommended framework or set of guidelines should be developed by professional educators based on the concepts listed in the Handbook on California's Natural Resources. The Advisory Committee on Conservation Education should be retained to advise these professional educators and review the work as it progresses.

MATERIALS AND FACILITIES

The State Department of Education through the Conservation Education Service should provide leadership in developing conservation materials which are factual, current, easy to use, and adaptable to local situations. The materials would include films, books, pamphlets, pictures, charts, posters, curriculum kits and modules. The Department should also investigate and disseminate information about new technological teaching devices suitable for use in this field. Special efforts are needed to improve conservation education programs at the junior and senior high school levels. Frequently opportunities for instruction in various course areas such as science, economics, and political science are overlooked. As a result, few students graduate with an awareness of their relationship to the total environment or of their responsibilities for its care. Hopefully, as conservation instruction is improved and upgraded at the elementary school level, there will be a corresponding improvement at the secondary level.

All school districts should be assisted as needed in the establishment of planned, permanent outdoor study areas (a) on school grounds (b) elsewhere in the district or community where and when opportunity exists. The community center type of school construction should be studied and used wherever possible. Under this concept, several local agencies cooperate in the planning and construction of a multipurpose community facility which may include a city park, library, school, city offices and other facilities. Such an arrangement permits better utilization of the building and grounds than possible when each agency builds separate installations. A nature study area which could serve both schools and the community could be included in such a community center. The use of local, state, and national parks and environmental study areas should also be encouraged.

FUNDING

Funding is one of the most critical problems facing school districts in developing and implementing sound conservation education programs. Many of the best features of good programs, such as outdoor laboratories, field study trips, and resident outdoor schools, are difficult to finance under present school fiscal conditions. Funds are also necessary for inservice training programs.

Most districts find that the State contribution plus revenue raised from record high property taxes are often not enough to provide even an adequate program. It is beyond the scope of this Committee to recommend remedies for this situation, but it is agreed that all programs-including conservation-suffer from this condition.

Funds for building resident outdoor education schools authorized by Section 7951 of the State Education Code, might be supplied through the issuance of State revenue bonds. The bonds could be retired through funds collected from school districts for participation in outdoor education programs. Such schools could be located on public lands and be operated within the rules and regulations of the public agency concerned. It is estimated that approximately twenty years would be required to pay for such a school facility.

Local districts should be permitted to obtain additional local funds to establish and operate outdoor schools if the community so desires. Legislation enabling school boards to levy an outdoor school tax override or to submit such a proposition to the voters should be passed by the legislature.

PERSONNEL

The cooperation and active support of school administrators is essential in developing successful conservation education programs. It is important that they be included in any plans for implementing conservation education in local school districts. Their enthusiasm and support as educational leaders is essential to the success of any plans or programs. They must have the skill and knowledge to guide and support local endeavors, and must accept responsibility for providing leadership in this important curricular area.

The key person in any conservation education program is the classroom teacher. In order to help them meet their responsibilities we must:

- Convince them that they are indeed the key to a successful program.
- Equip them with the skills and knowledge they will need to do the job.
- Provide them with the materials, equipment, and facilities they must have.

SECTION IV

TRAINING OF TEACHERS IN CONSERVATION

PRESERVICE EDUCATION

The training of teachers is basic to any effort to upgrade conservation education. The goal in training the teacher in conservation should be the development of a well educated, sensitive, articulate person who can present all sides of conservation issues in their proper ecological and social context for, in the broadest sense, all knowledge is related to conservation. This implies that a general education rather than a specialized undergraduate program is desirable. It is also recommended that other courses in the preservice curriculum include the conservation concept where appropriate.

At least one upper division conservation course designed to tie together and summarize conservation concepts gained in earlier courses should be required for all teacher trainees. The course should include a description of the resource base available to mankind, the manner of its rational use, the alterations which occur as it is used, the limits of acceptability of these changes, the economics of resource management and the formulation of public policy. The study of the conflicts between uses and the resolution of these conflicts should form a major segment of the course. These topics should be treated in a general rather than a highly technical manner. A portion of the course content should be devoted to instruction in the techniques of teaching conservation, the preparation of curricula in this field, and a knowledge of available materials and resources (see appendix p. 41). Due to the wide acceptance of the elementary outdoor school program each elementary teacher trainee should be required to spend one week working in a resident outdoor school as a part of his practice teaching assignment.

In order to provide a thorough grounding in the principles of conservation, it will be necessary to utilize the expertise of several fields in developing such a course. For example a knowledge of the resource base involves a knowledge of geology, soil, water, air, vegetation, and wildlife. The techniques for the utilization of this base includes the areas of agriculture, mineral technology, forestry and various related industrial processes. The aesthetic and amenity values of the resource base and the economic, political, legal mechanisms through which people respond to their environment and its resources involve the social sciences and the humanities. Specialists in the education field will be needed to provide instruction in specific methods of teaching conservation.

INSERVICE EDUCATION

The Committee recommends that a massive inservice educational program be established to enable teachers to meet their obligations in the field of conservation education. These classes should cover the subject matter of conservation described above. Some of this material could be covered in field courses; either in traveling classes or at camp locations. It is important to use the natural environment whenever possible. The use

of well-produced films, television tapes, and other materials would also be of great value in such an effort and should be produced at the state level.

The teachers most in need of conservation education instruction are those who have little or no interest or knowledge of the subject. A real effort should be made to reach these people. All too often the only people who take conservation education courses are those who already know quite a bit about the subject and are doing at least an adequate job of teaching it.

Other points to be considered in planning an inservice class are:

- The program should be geared to the curriculum the participants will be using

- The time and location must be convenient to participants

- All materials and facilities should be on hand for all class sessions.

Incentives in the form of salary point credits, release time or pay should be provided. The Department of Education Conservation Education Service, county offices, governmental agencies, industry and private conservation agencies should provide leadership support and assistance for these programs.

OTHER CONSIDERATIONS

The need for college level instruction in conservation for students in all disciplines is necessary. These people will, as a group and individually, exert great influence on society throughout their careers and therefore must be aware of the need for conservation.

The Committee strongly urges colleges and universities to continue and intensify research in the field of environmental problems.

Junior colleges throughout California have a vital role to play in conservation in providing general survey courses for a great number of students and in training resource technicians. It is recommended that these two obligations be reviewed regularly and that improvements be made when and where indicated.

The Committee recommends that the short intersession courses offered on many state college campuses be used for teacher inservice training in conservation.

The Committee recommends that industry, governmental agencies and private conservation groups assist in summer conservation education workshops for teachers.

The Committee recommends that colleges and universities offer environmental education for the public in general and for school teachers in particular through evening courses, seminars, lectures, summer courses and workshops, extension courses, and correspondence courses. These can provide an effective means of reaching many people, particularly adults, for whom regular classroom instruction during the academic years is not available.

The language of SB 1 implies that there are many conservation teaching possibilities in a great many subject areas throughout the elementary and secondary school curriculum which should be utilized. The committee wishes to be sure that this point is not lost on institutions of higher education. In a survey prepared for this committee, it was determined that at least 26 areas of study offered in colleges and universities certified for teacher training in California offered courses which could be of value in providing a teacher trainee with background material in conservation. These subject areas included economics, political science, life sciences, business administration, forestry and even philosophy. Clearly concepts of conservation can and should be included in the content of many college level courses offered to prospective teachers. Nor should such instruction be limited to teacher trainees. All of society can benefit from an emphasis of this nature,as graduates so instructed assume positions of leadership in the community.

SECTION V

THE ROLE OF THE COMMUNITY IN CONSERVATION EDUCATION

A. PRIVATE CONSERVATION ASSOCIATION

Reflecting a growing public awareness of environmental problems, a variety of private organizations are involved in the current conservation effort. They can make a major contribution to conservation education.

These organizations can be divided roughly into (1) membership groups; (2) community groups; (3) youth groups. Each group has a special emphasis and stresses a particular point of view. Each of these groups publish material of one kind or another which reflect their particular interest. Some have money to distribute their material and are in the business of doing so, but most have meager funds, publish primarily for their own membership and are hard put to supply their material upon request or even for payment. Nonetheless, there is a great wealth of conservation education material here to be utilized.

Most of this material is suitable primarily for teacher and upper-grade use. However, some groups -- notably the Audubon Society -- produce broad spectrum material aimed at specific grade levels as well as for adult use. It appears that there is room for development of more materials and programs on the primary levels by most conservation organizations.

Along with these organizations, there are a number of individuals and groups in professions related to conservation who are interested in the educational aspect. Included are architects, landscape architects, biologists, scientists of many disciplines, artists and naturalists. Several dedicated volunteers are doing outstanding conservation work with their local school districts. There is a good deal of interest in this kind of volunteer effort among other individuals throughout the state and devoted volunteers can make a major contribution.

Youth groups, including church groups, frequently include conservation activities among their programs. Outings, tree-planting programs, and clean-up trips, often involve local school children. There is an opportunity here for these groups and the schools to work together -- to the benefit of all concerned.

Other community conservation educational facilities include junior museums, nature museums, and arboretums, which are supported by interested citizens. Some schools take maximum advantage of these facilities holding classes in the museum, using available equipment and displays. Others are overlooking this kind of opportunity.

To sum up briefly, there is a wealth of material -- valid and important material -- being produced by private conservation organizations. There are also many interested youth and community groups and individuals who can contribute time and know how to conservation education. The questions is how best to utilize the material and talent available.

PROPOSED MATERIALS CENTER

A central library and repository of conservation education materials from private conservation groups, from industry, from professional, scientific and governmental sources should be established at the state level. This would fill a great need by gathering together all the available "extra-curricular" conservation material. Such a repository would also serve as the master source for regional conservation education centers. In setting up such a library, new methods of data processing, new library procedures, and new ways to distribute material should all be explored and utilized with imagination. The material included should be national as well as local. It should be comprehensive, including audio and visual as well as graphic. It should be screened, evaluated for validity, pertinence, objectivity and usefulness. Sources should, of course, be identified. The best use of the material should be analyzed and described and should be reviewed periodically.

Broad subjects such as "water" could include everything from Save-the Bay pamphlets to a P.G. and E. brochure on rivers, from the Soil Conservation Society booklets to the National Wildlife Federation publications. Local water problems could then be studied in a broader context.

Such a library could also serve as a conservation education activities bureau -- publishing a schedule of available speakers, films, field trips, meetings and conferences, at regular intervals.

A strong effort should be made to interest a major national foundation in funding this library.

TEACHER EDUCATION

A great deal of conservation material is published on the adult level, and is therefore suitable for use primarily by teachers and secondary students. Much of this material could be used in teacher training programs at both pre and inservice levels.

THE COMMUNITY AND THE LOCAL PROGRAM

Schools should be encouraged to take every advantage of local conservation education opportunities. Local activities of private conservation organizations, youth groups, church groups, garden clubs, and professional groups, should be explored and utilized whenever possible.

Museums, arboretums and other outdoor facilities (church camps, church grounds -- which may also serve as outdoor laboratories) should also be used.

Informed individuals in various disciplines and talents should be encouraged to work with the district. Artists, photographers, scientists, and architects, and planners may have a great deal to contribute.

A good deal of material being published by special interest groups -- from rock hounds and mycological societies to such groups as People for Open Space -- is suitable for reference and use in classrooms and school libraries. Each school district should be prepared to subscribe to various publications of value which are not otherwise obtainable.

The groups involved in local conservation issues can provide usable material for class projects in science, social science, and other curricular areas. For instance, in San Francisco and Marin counties, many students became interested in acquiring land for Point Reyes National Seashore. Working with the Point Reyes Foundation, they studied the area, held cake bakes to raise money, gathered signatures for petitions and wrote letters to congressmen -- an excellent exercise in social science. Such projects should be considered and explored at various grade levels.

Training in conservation and environmental concern should be developed for youth leaders such as scouts, YW and YMCA, and campfire girls. A private sector-public school cooperative program -- could be set up to provide this training. Many local conservation groups could provide interesting and stimulating programs, outings, and other activities as a contribution to such a grogram.

In summary it may be said that much useful and valuable conservation material and talent is available from private conservation organizations, youth groups and organizations. Schools should actively avail themselves of this source of support for conservation education.

SECTION V

B. ROLE OF BUSINESS AND INDUSTRY IN CONSERVATION EDUCATION

The widening public awareness of conservation and environmental issues and the general acceptance of the so-called spaceship earth theory, have effectively dramatized the choices to be made in the intelligent management and utilization of our resources, from air and water to farmland and forests.

A large number of companies, particularly those in resource-oriented industries, have shown definite and growing interest in all educational processes, from kindergarten through the graduate study level. Many have offered active assistance in both delegated manpower and materials.

In another portion of this report the point is made that a good conservation education course for teachers should include a study of the relationships of resources to economics and other social factors, as well as to the policies and conflicts in human relationships. These conflicts directly involve the use and management of resources.

Therefore, private resource-based enterprise must be involved in conservation education -- which we agree includes environmental education, and which we agree must begin with the conservation of the individual and his culture -- if it is to remain viable.

The environmental deterioration we are facing is caused by the demands of people. More people, demanding to go more places, to have more things, to enjoy more leisure in more different ways--have produced the richest, and most prosperous, but potentially the most catastrophic civilization in terms of environmental destruction the world has ever known.

We are at a critical balance now and the choices we must make grow increasingly important. The conservation education program of the future must be based on the question of choices--choices between that which we must have, that which we would like to have, and that which must sometimes, however reluctantly, be judged something we do not need at all. Private enterprise must furnish honest and comprehensive information regarding these choices if intelligent decisions are to be made.

Conservation education becomes, then, not a floating burden to be assigned to a junior executive with a little time on his hands, but an item of abiding interest to the major executive who must maintain balances now, and plan for operation as far into the future as reasonably foreseen.

Conservation education deals with the entire environment. The basis for sound judgements must be widened to include economic and use criteria, as well as the more obvious and currently popular facets of recreation and aesthetics.

The Department of Education should regard business and industry as willing allies and helpers in the conservation effort. The Conservation Education Service should, as a matter of course, establish and maintain communication in depth between itself and the industrial community through responsible organizations representing both California and national industry. As proposed in Section VII, the permanent Statewide Advisory Committee will have the industrial representation, essential for such communication.

COMMUNICATION

The customary time lag between the development of new industrial processes and techniques as well as discoveries in materials or applications, and their eventual appearance in textbooks and classroom must be shortened drastically or eliminated.

The communication established between the Department of Education and business and industry through the conservation education consultant's office must be a two-way street so that educators may have at least a chance to indicate what they need and want from industry and industry a chance to put the requested information in useable form that will fit within the patterns of today's schools. Once this idea is established as a workable premise, a minimum amount of regulation should be imposed so that an informal and innovative approach to information dissemination may evolve.

Many teachers now in the classroom are often unaware of the variety of sources of information available to them, and all-too-frequently they overload the sources they do know about with repetitious or misdirected inquiries such practices result in a great waste of time and money. Conversely, industry frequently must fumble with a series of inquiries before it can analyze the situation and develop usuable materials and services for educators.

The permanent Statewide Advisory Committee on conservation education as proposed in Section VII should be established without delay and should include as an early priority establishing guidelines which permit the classroom teacher to work more effectively with industry obtaining worthwhile information, materials and services. A similar broad and non-limiting arrangement should be set up and kept current to give the business and industrial communities a basic insight into the needs of teachers.

SECTION V

C. THE ROLE OF RESOURCES-ORIENTED GOVERNMENT AGENCIES IN THE SUPPORT OF CONSERVATION EDUCATION

While the statutory authority to provide statewide leadership in conservation education lies with the Department of Education, the Resources Agency of California, along with federal resources-oriented agencies operating in California, should seek to provide techical support to educators, drawing upon the expertise of the people in these agencies. There exists an agreement of cooperation between the Resources Agency of California and the State Department of Education, signed first in 1963 and then reaffirmed by a new agreement on July 5, 1967 which clearly delineates these responsibilities.[1] To extend the quality of such assistance and to coordinate activities with the various agencies of the United States government in California, there has been organized a State-Federal Resources Information and Education Officers Council which has been meeting since December, 1967. Membership on the council includes, from the State Resources Agency, representatives of the Departments of Conservation, Parks and Recreation, Fish and Game, Water Resources and the Water Resources Control Board; and the State Department of Agriculture.

From the federal agencies there are representatives of the following organizations: Army Corps of Engineers, Fish and Wildlife Service, Forest Service, Bureau of Land Management, Soil Conservation Service, National Park Service and the Bureau of Reclamation. In addition to the representatives of Federal and State resource agencies, a representative of the California Department of Education regularly attends the meetings and participates in the work of the group as an ex officio member of the council.

As thevarious agencies recognize the increasing importance of their role in conservation education, it is expected that the demand for services and materials will increase and therefore the agencies will have to increase their budgets for these functions.

Through interagency cooperation and with the direction and assistance of the Department of Education, duplications and materials and services can be eliminated and the net effect will be a much more efficient and effective program.

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[1] Appendix

STATE AND FEDERAL AGENCIES

Public agencies at the state and federal levels, particularly those managing large areas of public lands, such as the U.S. Forest Service, National Park Service, U.S. Bureau of Land Management and the State Department of Parks and Recreation, State Division of Forestry and State Lands Commission should prepare informational material designed to inform educators and students of the value of public lands as educational resources for field trips, and outdoor education centers, and make land available for this purpose. For example, the California Department of Parks and Recreation and the Department of Education could jointly construct and operate resident outdoor schools at various locations in State parks throughout California. The Department of Education could be responsible for the educational staff and instructional program, while the Department of Parks and Recreation would supply information, interpretive services, and operate the physical plant facilities. A unit cost to cover operating expenses for the facilities and permit loan repayment would be set up, and school districts would be permitted to send students upon payment of the established weekly unit cost. Initial development funds for facilities could be provided by sale of revenue bonds.

Similar programs, similarly financed, could be developed with all federal and state agencies operating in California to make outdoor areas under their control readily available for outdoor education purposes.

Study kits emphasizing the methods and techniques of the historian could be developed by agencies managing historical facilities. For example, a kit containing facsimile documents, pictures, drawings and other materials could be prepared for Sutters Fort. Questions could be prepared which could be answered by a careful study of the materials in the kit and a visit to the Fort. Conflicting or unrelated information could be introduced to provide students with an opportunity to make judgements based on a careful study of available information.

Field trip procedures and policies differ widely among the various school districts. The lack of uniform procedures in making reservations, and pupil preparation creates problems for resource management personnel offering field trips. It is proposed that the Conservation Education Service of the Department of Education develop a set of guidelines for pupil-teacher planning and conduct on field trips which could be printed and distributed by the Department of Education.

A simple guide suggesting pre-visit studies, on site investigations, and follow up activities for teacher-use should be available for all field study areas used by students. It is suggested that the Conservation Education Service prepare an outline for the development of such a guide to assist management personnel in preparing material locally. One or two sample guides could be developed jointly to serve as examples.

Local resource management personnel should be helped to examine their educational activities to determine if they are making the most effective use of their personnel. It is suggested that teacher training and curriculum consultation, for example, is a better use of resource personnel time than conducting student tours when the students are inadequately prepared or supervised.

The California Department of Parks and Recreation is developing a mobile unit to help students gain a better understanding of California history. It is proposed that the Department of Education offer all possible assistance on this project.

Continuing liaison between the Department of Education and all federal and state land management agencies is necessary and should be maintained. Finanacing and staffing of public resource agencies and the Department of Education to meet the increased demands for educational assistance that can be expected as a result of the conservation requirements of the Education Code should be provided by the Legislature for state agencies. Federal agencies should receive budgetary support form the Congress for their activities in the educational field.

The Committee recommends that the California Resources Agency coordinate all of its activities in the conservation education field through the office of the Chief of Conservation Education. The person assigned to this position should work closely with the conservation education consultant in the Department of Education.

The Committee believes that the State-Federal Resources Education and Information Council should be augmented as needed and continue its work of coordinating the efforts of the various agencies, and that the Department of Education continue to cooperate with this group through its conservation education consultant.

SECTION VI

Conservation Education Materials

The conservation instruction mandate contained in Senate Bill 1, has vastly increased the already critical need for high quality graded conservation education materials for all levels and all areas of the education system of California. The needs for quality curriculum materials are magnified by (1) inadequate teacher preparation and consequent low level of interest in conservation; (2) diversity and difficulty of locating sources of graded materials; (3) the time and dollar costs of gathering materials; (4) the competition of other requirements and interests; (5) the limited knowledge and interest in conservation of most leading authors in most fields; (6) the failure of some conservation-oriented authors to link their conservation interests with their major academic discipline; (7) the failure of the Curriculum Commission to include conservation in its specifications and to utilize conservationists in textbook evaluation; and (8) the approach of Senate Bill 1 which is based upon integration of conservation education with other disciplines rather than treating it as a discrete element in the curriculum. These considerations create a need for the inclusion of conservation concepts and content in most of the textbooks used in the State and pose at least as many and as serious problems for authors as for classroom teachers and administrators.

To assist in correction of these conditions three studies were made of the availability and quality of conservation education materials used in or available to California schools and teachers. These studies are:

- "An Analysis of State Adopted Textbooks Relative to Conservation Education Information" (completed June 1967)

- "An Analysis of Audio-Visual Materials Relative to Conservation Education" (Produced by the Los Angeles City Schools under contract with the California Department of Education, January, 1969)

- "Evaluated Bibliography of Free and Inexpensive Conservation Publications" (Produced by Los Angeles County Schools under contract with the California Department of Education, May, 1969)

This report is based on these studies plus a study of the materials evaluated.

Textbooks

Basic textbooks are the most seriously deficient of all curriculum materials in conservation concepts and content. This is completely expectable because:

- The Curriculum Commission criteria do not include conservation elements.

- Most authors have little or no knowledge of or interest in conservation.

- Many conservation-oriented authors fail to connect this interest with their major discipline, particularly if they are in the humanities, social sciences, or physical sciences.

- Some conservation-oriented authors deliberately abstain from inclusion of any conservation elements and interrelations with other fields on the grounds that such materials are either out of place or dilute the major subject content of their books.

- Some conservation-oriented authors include conservation elements in their books but carefully avoid use of the term which causes the value of the conservation materials to be lost to all but strongly involved and experienced teachers.

In most science texts investigations, problems, and projects are even more deficient in conservation significance than the instructional text portions of the books. Several books ostensibly directed toward enlightening pupils about man's environment devote inordinate amount of time to outer space. Man's active environment will quite likely include at least a considerable portion of the solar system some day, but that time is in the future and most people know far too little about their present environment to live in and use it properly. Therefore, units on outer space should be continued but scaled down to a less dominate portion of textbooks that are supposed to be oriented to man's earth environment. Illustrations with conservation value are lacking in most books, and captions are even more deficient in pointing up the conservational aspects of illustrations which contain such content. The poor quality of illustrations in some texts, failure to connect illustrations only because it is usually done compound the illustrative deficiencies of textbooks with regard to conservation.

In order to in some measure correct these deficiencies, the Committee recommends that the State Board of Education require that:

- The Curriculum Commission criteria include the integration of conservation concepts and content in all basic and supplementary textbooks in appropriate disciplines with use of the term "conservation" in such contexts.

- Authors and publichers be adequately informed of this criterion.

- The conservation education consultant to the State Department of Education and members of the Conservation Education Advisory Committee or conservationists approved by the Committee be

included on panels of consultants for evaluation of textbooks. It should also be noted that the services of the California Resources Agency are available for consultation on the technical aspects of resource management.

- Instructions to evaluators include criteria on illustrations and captions.

Curriculum Materials

Curriculum materials for conservation are the most deficient at the elementary and intermediate grades because of the widespread attitude, among conservationists as well as others, that conservation is an "adult" field reserved for the mature, highly trained specialist in science, technology, or occasionally economics. Awareness of the need to begin to build conservation knowledge, understandings, appreciations, and habits at the earliest possible age has only recently been recognized by more than a handful of conservationists and educators and is still very limited. As a result there is relatively little quality graded material in conservation available for use below the secondary level and virtually none for the kindergarten and pre-kindergarten levels where the foundations for a conservation ethic must be laid.

The Committee recommends that the State Board of Education through the Conservation Education Service take action to encourage producers and suppliers of curriculum materials to develop quality graded materials for the pre-kindergarten to intermediate levels. Such action might be both direct--by publicity concerning the need and by revision of Curriculum Commission and other evaluative panels' criteria--and indirect by the State Department of Education and/or the Advisory Committee.

Conservation and the Humanities

Humanities curriculum materials tend to be the most deficient in conservation emphasis and those used in the social sciences only somewhat less so. This is due to the traditional isolation of the humanities and social sciences from any consideration of the natural environment and the environmental related physical, earth, and life sciences. Similar deficiencies occur in curriculum material used in the physical, earth and life sciences which have traditionally disregarded the interrelationships and interaction of these fields with the humanities and social sciences.

The Board and Department of Education has the responsibility to acquaint authors and publishers of the necessity for including references to conservation and to the interrelationships and interaction of these several fields in all curriculum materials. Such action might include:

- Obtaining support of the State Department of Education for authors' workshops and other activities under its auspices.

- Actively enlisting the cooperation of the institutions of higher education in California to present courses, workshops, institutes, exhibits, and other activities for educators and authors.

- Including these elements in Curriculum Commission and other evaluative panel criteria.

Audio-Visual Materials

Among audio-visual materials with conservation education value, too little has been done to develop and utilize media materials such as three-dimensional models, simulation models, stereo-photographs, multi-media and multi-screen and audio materials with conservation value.

Producers of audio-visual materials should be encouraged by direct and indirect means to make fuller utilization of these technological innovations in producing materials suitable for conservation instruction.

Resource Ecology Emphasis

When available curriculum materials contain conservation concepts and content their approach and concept of the term tends to be narrow and mechanistic. Conservation is too often presented as either the simple application of science via technology, as nothing more than resource use, or as a purely economic problem. This leads to inadequate consideration of cause-effect relationships; disregard of the fact that actions which are beneficial in the short run are sometimes harmful over longer periods of time; slighting or completely ignoring the interrelations, interactions, and interdependence of man and his resources. The consequence of this is that the ecology of resources is passed over or ignored completely.

Use of the Term Conservation

Presentation of conservation concepts and content is often so vague that only an experienced and conservation-oriented teacher can recognize them. Evaluators of curriculum materials adopted or recommended by the State Board should ensure that conservation concepts and content are clearly presented and identified as such. Evaluation panels should include conservationists approved by the Conservation Advisory Committee in order to implement this recommendation. Producers of free and inexpensive materials and other items not subject to statewide review should be encouraged through the Department of Education Conservation Service to present conservation concepts and content clearly with use of the term in appropriate contexts. Such material should be reviewed and updated periodically.

Factual and Conceptual Accuracy

Errors of approach and concept appear too often. These include presenting as strong possibility or even established fact that (a) man can control nature (b) that science and technology can provide all of the needed solutions to conservation problems (c) that resource use constitutes conservation and (d) that change and progress are identical. The Curriculum Commission and other evaluative panels should require correction of such errors just as they require correction of content errors in other fields.

Free and Inexpensive Materials

Supplementary texts, audio-visual materials, and free and inexpensive materials as a whole present conservation concepts and content more effectively than do most textbooks in the life and social science fields. Unfortunately a large proportion of the free and inexpensive materials are ephemera in that supplies are exhausted and replaced by new items long before their value has ended. This creates problems for potential users of materials and therefore inhibits effective teaching of conservation. Producers of such materials should be aware of these problems and should seek to produce materials of sufficient quality and in sufficient quantity to permit their use in educational programs over a reasonable period of time.

Suppliers of free and inexpensive materials are widely dispersed and highly specialized. This makes it very difficult and costly for the classroom teacher to locate needed materials.

A series of conservation materials centers as recommended in Section V would help to remedy this situation.

SECTION VII

THE ROLE OF THE DEPARTMENT OF EDUCATION IN CONSERVATION EDUCATION

A basic premise underlying all of the deliberations and study of the Advisory Committee has been that the Department of Education is legally and morally obligated to assume a strong role of leadership in the conservation education program of the State of California. The Committee recognizes six provisions of the Education Code and a joint Departmental policy statement as delineating this leadership role.

- Education Code Sections[1] 8503, 8551-c, and 8571-b require that adopted courses of study provide for instruction in the protection and conservation of resources and in man's relations to his human and natural environment at appropriate elementary and secondary grade levels and subject areas.

  These sections were enacted by the legislature in 1968 as a part of the Miller Senate Bill 1, a major Education Code revision. Prior to the passage of Senate Bill 1, the only legal requirement of conservation instruction was that Conservation, Bird and Arbor Day should be observed in the schools with appropriate educational activities. (Education Code 5205)

- The Rafferty-Livermore Statement of July 5, 1967 pledges the Department of Education to assume a role of statewide conservation education leadership and pledges the Resources Agency to provide support and technical assistance for such a program. (See appendix for complete text)

- Education Code 363.5 and 6011.5, passed by the Legislature in 1968 (Senate Bill 206, Moscone and Marks) created a Conservation Education Service in the Department of Education and empowers the Department to make planning grants to local districts for conservation education programs. Legislation to fund these operations was introduced in the 1969 session (Senate Bill 1392, Moscone) but died in Committee.

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[1] Appendix

HISTORY

Previous Conservation Efforts

For many years a consultant in the Bureau of Elementary and Secondary Education was assigned to devote ten per cent of his state support time to conservation education. The Bureau of Health and Physical Education also shared some of the conservation education work load by accepting responsibility for outdoor education. Responsibility for conservation education and outdoor education was assigned to the Title V Conservation Education Project in January, 1968.

A great amount of assistance in the educational program was, and still is, rendered by the Resources Agency and the Department of Fish and Game. Both of these organizations have specific state supported conservation education positions. Several other state agencies have combined education and public information positions.

An interdepartmental conservation education committee was established some years ago in an attempt to coordinate the activities of the Department of Education and the Resources Agency. Later, separate Resources Agency and Department of Education committees were set up with the chairman of each serving as an ex officio member on the opposite committee. The Resources Agency committee meets regularly but the Department of Education committee has not met since the retirement of its chairman in 1968.

Senate Hearings

On March 16, 1966 the Senate Fact finding Committees on Education and Natural Resources met jointly to consider the topic "A Program of Conservation Education for the Department of Education," The hearing established that the program currently offered was far from adequate and that planing was needed to set up legislative and administrative guidelines essential to its improvement.

Asilomar Conference

On July 9-11 a conference for this purpose was held at Asilomar. Members and staff personnel of the two senate committees, educators, industry representatives and conservationists participated. A report covering this conference was printed by the Department of Education. The Advisory Committee has studied this report in detail and has used it as the basis for several of their recommendations.

Advisory Committee

In May, 1967 the State Board of Education activated an Advisory Committee consisting of representatives of industry, government, education and private conservation agencies to study in detail the problems identified by the Senate Committee and the Asilomar Conference and to make

specific recommendations for solving them. A specialist was employed in January of 1968 to serve as executive secretary to the Committee and as a conservation education consultant in the Department of Education. All Committee operations and the consultant position were, and are currently, funded through an Elementary and Secondary Education Act, Title V grant.

Handbook on California's Natural Resources

In September, 1968 the publication Handbook on California's Natural Resources was printed by the Department of Education and offered to the schools. The ninety-six page volume contained educational concepts of conservation and detailed information on specific resources. By December the entire 15,000 copies were gone. Back orders for several hundred copies are on file in the Department. A revised edition is being planned with the cooperation of the Resources Agency. The Department of Education will, if funds can be found, print the educational material while the Resources Agency will print a companion volume containing specific information on the resources.

CONSERVATION EDUCATION SERVICE

The state legislature and the Governor have clearly established a conservation education policy.

Thus far, funds have not been made available to implement these policies. If it were not for temporary Federal financing, there would be no program at all in the Department of Education.

The Committee considers implementation of the Conservation Education Service in the Department of Education with adequate funding and personnel, to be imperative. One consultant position with adequate support is considered a bare minimum. The Committee urges the Board of Education and the Department of Education to actively seek funding for this purpose.

Areas of Responsibility

The Committee recommends that these specific subject areas be the responsibility of the Conservation Education Service:

1. Resource use education (wise use of natural and human resources).

2. Environmental education (protection and enhancement of the common environment).

3. Outdoor education (use of the out-of-doors on a short term or extended basis as a part of the conservation education program).

4. Conservation teaching methods, techniques, materials and teacher training.

These services should be offered by the Conservation Education Service:

- Provide consultant services to school districts in conservation and outdoor education as requested.

- Arrange for the review of new books, films, free and inexpensive publications and other related conservation materials.

- Keep the schools informed as to the latest in teaching materials.

- Provide leadership in the inservice training program.

- Study and report on outstanding conservation education projects in operation throughout the state.

- Prepare annual Conservation Week mailings for all California schools.

- Develop conservation materials, guides and reports as needed using part-time consultants when necessary.

- Attend and participate in conferences and meetings relating to conservation education.

- Assist institutions of higher learning in their preservice and inservice conservation education programs.

- Work with representatives of government agencies, industry and private conservation groups in planning and directing programs of conservation education.

- Perform other related services and responsibilities as appropriate.

In the future, the Conservation Education Service should be elevated to bureau status within the Department of Education. This unit would be headed by a Bureau Chief to serve as an overall administrator and would include:

- A conservation education teaching methods service to develop practical teaching materials, demonstration equipment, films, courses of study and other services.

- A publications service providing bibliographies of available material and developing and printing materials as needed.

- A teacher training section to work with colleges and universities, county offices and local school districts in developing and conducting preservice and inservice programs.

Regional and National Cooperation

There is very little communication or cooperation between the various state departments of education on conservation education matters.

If we agree that conservation education is a regional as well as a national problem, an effort must be made to remedy this situation. Such communication would be mutually beneficial to all participants because it would facilitate:

- the exchange of ideas, materials and plans between the states.
- the development of cooperative projects of benefit to all participants.
- the development of a more unified approach to a study of environmental and resource use problems.
- the establishment and encouragement of new programs in states lacking them.

It is recommended that the State Department of Education through its Conservation Education Service, seek funding to sponsor a regional conservation conference for state department of education representatives from Oregon, Washington, Idaho, Arizona, Nevada, and Utah. The purpose of this conference would be to permit participents to study in detail the conservation education efforts of other states, and to discuss possible means of cooperation, and to explore the possibility of setting up a national cooperative effort through the U.S. office of education.

The Committee recommends that funds for this conference be sought from private industry, conservation associations or foundations, or through a federal grant.

Conceptual Framework

The Education Code indicates that conservation is to be taught in appropriate grade levels and subject areas, grades one through twelve. It is also specified that man's relations to his human and natural environment shall be a part of the social sciences program in grades one through twelve. In order to provide such instruction, a guide showing how basic conservation concepts may be taught in various subject areas and at various grade levels must be produced to assist local districts in developing programs suited to local needs. This is particularly important if the conservation implications inherent, but not properly emphasized in the proposed Social Services Framework are to be adequately covered.

Other Publications

It is recommended that the Board and the Department of Education arrange for the printing and distribution of the following publications produced as part of the studies of this Committee.

Evaluated Bibliography of Free and Inexpensive Conservation Publications (Approximately 2000 copies for distribution to county offices and local school districts).

An Analysis of Audio-Visual Materials Relative to Conservation Education (Approximately 2000 copies for distribution to county offices and local school districts).

Advisory Committee Report (Approximately 2000 copies to fill requests from schools, governmental agencies, industry, conservation groups and interested citizens).

Since a considerable amount of time and money have been expended in the production of these publications, failure to produce them and place them where they can be used would constitute a waste of public funds.

Outdoor Education Guide

Since many school districts are planning to set up resident outdoor education programs, a guide providing information on land acquisition, site development, design and construction of facilities, the instructional program, and the legal aspects of the program would be most valuable. It is recommended that the Department of Education through its Conservation Education Service develop such a publication.

ADMINISTRATIVE ORGANIZATION FOR CONSERVATION EDUCATION

Advisory Committee

The Committee recommends that a permanent advisory committee be established by the State Board of Education to facilitate communications between educators and the various areas of conservation interest. Such a committee will provide the Board and the Department of Education with the services of experts in the field of conservation education and will also provide a means of communication with schools. It is recommended that this committee meet twice yearly to review the programs and planning of the Conservation Education Service and bring to the service, progress reports and program plans from the schools and from the various areas of conservation interest. It is suggested that membership be drawn from the following areas:

- Colleges and universities

- General interest citizen groups

- Museums and research organizations
- Federal and State resource agencies
- Teachers organizations
- Citizen conservation groups
- Industry
- State government (an elected official such as the lieutenant governor or a legislator)
- County office representatives (one representative from each of six major regions as set up by California Department of Education, Bureau of Reference Services).

A maximum of twenty members for the committee is recommended. Appointments should be made by the Board of Education upon the recommendation of the Department of Education and would be for a two-year period.

The six county office representatives would be chosen to represent their particular geographical area on the statewide committee. They would be responsible for contacting representatives in all county offices in their areas so that two-way communications may be set up between local school districts and the statewide committee.

In the diagram shown on page 40 the statewide Advisory Committee is shown reporting directly to the Board of Education. As a practical matter, we would recommend that the Conservation Education Service be delegated the responsibility of working with this group.

Department of Education Staff Conservation Education Committee

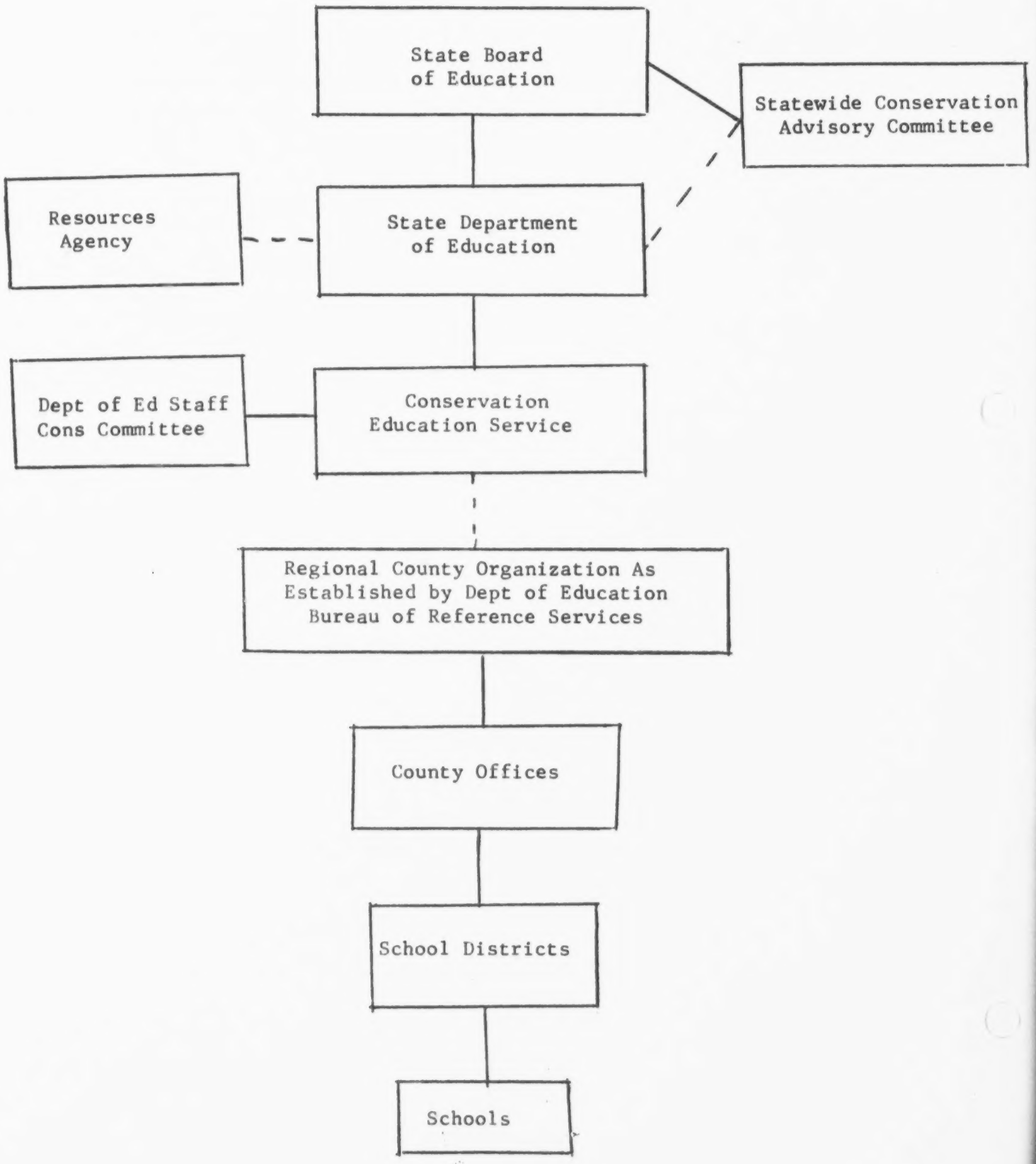
This group consisting of representatives of the Bureau of Audio-Visual Education, the Bureau of Health, Physical Education and Outdoor Recreation, and the Bureau of Elementary and Secondary Education has not met since the retirement of its chairman in September 1968. It is recommended that this committee be reactivated and the conservation education consultant named as its chairman. The committee membership should be expanded to include membership from these areas of conservation interest:

- School planning
- Agricultural education
- Elementary and Secondary Education consultant in science and social sciences

Other appropriate specialties should also be included on this committee when required. A representative of the Resources Agency should serve as an ex officio member of the committee.

The diagram on page 40 shows an organization through which the Conservation Education Service may be placed in direct contact with all schools and areas of conservation interest on a two-way basis. The committee recommends that such an organization be set up by the Department of Education as soon as possible. Both materials and information may be passed through such a network. It is suggested that meeting agendas and minutes of Advisory Committee meetings be distributed to school districts and county offices through this communications arrangement.

ADVISORY AND COMMUNICATIONS NETWORK
CALIFORNIA DEPARTMENT OF EDUCATION
CONSERVATION EDUCATION ADVISORY SERVICE


State Board of Education
Statewide Conservation Advisory Committee
Resources Agency
State Department of Education
Dept of Ed Staff Cons Committee
Conservation Education Service
Regional County Organization As Established by Dept of Education Bureau of Reference Services
County Offices
School Districts
Schools

AN OUTLINE FOR A COURSE ON CONSERVATION FOR PRESERVICE OR INSERVICE TRAINING OF TEACHERS

The course outline is intended to be a guide to the content of a course in conservation taught at the university and college level. It is recognized that the course may have to be taught by a team of three to four instructors. The expertise necessary to cover the broad range of the conservation topic is not always present.

As presented in the outline, the course would consist of twenty-seven lectures over a quarter or semester period. Thus it should be a five unit course. It would be best taught with one field or laboratory session each week in which the contents of that week's lectures were observed in field situations.

Insofar as the course is predominantly for teachers, it should include throughout the course, comments on how the material should be taught. The field laboratories could also emphasize this. There is in the last two lectures a discussion of teaching conservation.

A partial bibliography is attached for the use of instructors of the course. All of these books are in the Library of Forestry and Conservation at the University of California in Berkeley.

It is hoped that this course will be taught in exhilarating enough style that it will be taken by students out of a desire to learn the material and not because it may be required. The subject matter is such that it relates to everyone.

CONSERVATION

A Suggested Course Outline for Preservice Training of Teachers 1/

I. Introduction (Two lectures)

A. Definition of Terms
1. Conservation
2. Resources
3. Environment
4. Ecology
5. Etc.

B. Historical Aspects of Conservation
1. Development from primitive societies
2. Conservation problems of the past
3. Recent historical development

C. Current Scope of Conservation
1. Resource and environmental factors
a. Physical
b. Biological
c. Amenity - Aesthetic
2. Economic factors
3. Political factors
4. Interrelations between education and conservation

D. Examples of Present Day Conservation Problems and Issues

II. Resource and Environmental Factors in Conservation (Five lectures)

A. Physical Resources and Environment
1. Atmosphere
2. Hydrology
3. Energy
4. Geology
5. Soil

B. Biological Factors
1. Microbiological
2. Vegetation
3. Animal
4. Human

III. Processes Relating Resources and Environment (Four lectures)

A. Energy Exchanges
   1. Energy balance
   2. Productivity related to energy
   3. Fossil energy

B. Hydrologic Exchanges - The Hydrologic Cycle
   1. Precipitation
   2. Water yield
      a. Runoff and erosion
      b. Floods and flood control
   3. Water use
      a. Vegetation and crops
      b. Industrial and urban
      c. Water quality and pollution

C. Elemental Cycles
   1. Nitrogen
   2. Carbon
   3. Other elements
   4. Cycling of undesirable material
      a. Natural examples - toxic elements, salinity
      b. Newly synthesized materials

IV. Ecology and Ecosystems (Two lectures)

A. Interdependence of Organisms and Environment
   1. Food chains
   2. Transfer of materials between organisms
   3. Environmental limits to survival

B. The Human Ecosystem
   1. Position of man
   2. Physical relations (temperature, water, etc.)
   3. Nutritional relations (mineral, organic, energy)
   4. Mental health relations
      a. Aesthetic - amenity aspects of environment
      b. Sociological environment
   5. Demographic relations

V. Resource Use by Man (Six lectures)

A. Processes of Use
   1. Mining
   2. Agriculture
   3. Forestry - range management
   4. Wildlife and fish harvest
   5. Power and energy development
   6. Urban and industrial siting and development
   7. Landscape amenity and aesthetic use

B. The Conservation Landscape
    1. Compatibility of uses
        a. Exclusive uses
        b. Blending resource use
    2. Exclusive use areas
        a. Mining
        b. Wilderness parks
        c. Urban
    3. Multiple use areas
        a. Managing for compatibility
        b. Conflicts between uses
    4. Environmental Quality Maintenance
        a. Air pollution
        b. Water pollution
        c. Erosion
        d. Landscape quality
        e. Sound and noise
        f. Others

VI. Social and Political Aspects of Conservation (Three lectures)

A. Conservation Economics
    1. Supply and demand for resources
    2. Economic priorities
    3. Rare and unique resources
    4. Economic criteria in conservation decision making

B. Politics of Conservation
    1. Human conflicts in conservation
        a. Local interests versus distant interests in specific areas
        b. Individual versus group interests
        c. Resolution of conflicts
    2. Governmental organization for conservation

C. Conservation law

VII. Case Studies (Three lectures)
A. Worldwide Conservation Problems
B. National
C. Local

VIII. Teaching Conservation (Two lectures)

A. Course Content at Various Grade Levels
    1. Pre-school
    2. Elementary
    3. Secondary
    4. High School

B. Conservation Education Materials and Sources

C. Conservation Field Trips
   1. Organization
   2. Local facilities
   3. Fixed field facilities

D. Conservation News
   1. Identification of current problems
   2. Relation of individual interest to problem
   3. Identifying conflicts and special interests

IX. Partial Bibliography For Use Of Course Instructors:

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Barnett, H.J. and C. Morse. 1963. Scarcity and Growth. The Economics of Natural Resource Availability. 288 pages. Resources for the Future. Johns Hopkins Press, Baltimore, Maryland.

Beard, W.P. 1948. Teaching Conservation. 144 pages. American Forestry Association, 919 Seventeenth Street, N.W., Washington, D.C.

Ciriacy-Wantrup, S.V. 1963. Resource Conservation Economics and Policies. Revised edition. 395 pages. U.C. Press, Berkeley, California.

Clawson, M. 1964. Natural Resources and International Development. 462 pages. Published for Resources for the Future. Johns Hopkins Press, Baltimore, Maryland.

Conservation Foundation. Resource Training for Business, Industry, Government. 159 pages. A Report of the Natural Resources Study Committee published by the Conservation Foundation.

Cooley, R.A. 1967. Alaska - A Challenge in Conservation. 170 pages. Paper-bound. University of Wisconsin Press, Madison, Wisconsin.

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Gustafson, A., C. Guise, W.J. Hamilton, and H. Ries. 1949. Conservation in the United States. 534 pages. Comstock Publishing Company, Ithaca, New York.

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Kerr, R.J. 1960. Land, Wood, and Water. 380 pages. Fleet Publishing Company, New York.

Landsberg, H.H., L.L. Fischman, and J.L. Fisher. 1963. Resources in America's Future. 1,017 pages. For Resources for the Future Inc. Johns Hopkins Press, Baltimore, Maryland.

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Parson, R.L. 1964. Conserving American Resources. 521 pages. 2nd edition. Prentice-Hall Inc., Englewood Cliffs, New Jersey.

Raushenbush, S. 1952. The Future of Our Natural Resources. The Annals, American Academy of Political and Social Science, Volume 281. May 1952. Pages 1-264.

Richardson, E. 1962. The Politics of Conservation. Crusades and Controversies. 1897-1913. University of California Publications in History. Volume 70. 207 pages. Paper-bound. U.C. Press, Berkeley.

EXCERPTS FROM CALIFORNIA EDUCATION CODE, 1968 SUPPLEMENT RELATING TO CONSERVATION INSTRUCTION

(CHAPTER 3. DEPARTMENT OF EDUCATION)
(Article 1. General Provisions)

Conservation Education Service

363.5. There is hereby created a Conservation Education Service in the Department of Education. The Conservation Education Service shall encourage the development of educational opportunities specifically related to the conservation, the interpretation, and the use of the natural resources of the State of California, including but not limited to, the development of nature centers, the development of conservation and wildlife education camps, and the development of the educational curriculum in relation to the conservation of natural resources. (Added by Stats. 1968, Ch. 978.)

Article 3. Course of Study for Grades 7 Through 12

Areas of Study

8571. The adopted course of study for grades 7 through 12 shall offer courses in the following areas of study:

(a) English, including knowledge of and appreciation for literature, language, and composition, and the skills of reading, listening, and speaking.

(b) Social sciences, drawing upon the disciplines of anthropology, economics, geography, history, political science, psychology, and sociology, designed to fit the maturity of the pupils. Instruction shall provide a foundation for understanding the history, resources, development, and government of California and the United States of America; man's relations to his human and natural environment; eastern and western cultures and civilizations; and contemporary issues.

Article 2. Course of Study for Grades 1 Through 6

Areas of Study

8551. The adopted course of study for grades 1 through 6 shall include instruction, beginning in grade 1 and continuing through grade 6, in the following areas of study:

(a) English, including knowledge of, and appreciation for literature and the language, as well as the skills of speaking, reading, listening, spelling, handwriting, and composition.

(b) Mathematics, including concepts, operational skills, and problem solving.

(c) Social sciences, drawing upon the disciplines of anthropology, economics, geography, history, political science, psychology, and sociology, designed to fit the maturity of the pupils. Instruction shall provide a foundation for understanding history, resources, development, and government of California and the United States of America; man's relations to his human and natural environment; eastern and western cultures and civilizations; and contemporary issues.

Conservation Education

6011.5. The State Superintendent of Public Instruction, upon the recom-

San Mateo County Board of Education. 1941. Our Natural Resources and How to Conserve Them. A Unit of Work for Grades 7 and 8. 140 pages and Appendix. Mimeo. Board of Education, San Mateo County, Redwood City, California.

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Vol. 1: Plenary Meetings. 429 pages.
Vol. 2: Mineral Resources.
Vol. 3: Fuel and Energy Resources.
Vol. 4: Water Resources. 461 pages.
Vol. 5: Forest Resources. 321 pages.
Vol. 6: Land Resources. 623 pages.
Vol. 7: Wildlife and Fish Resources. 256 pages.
Vol. 8: Index. 194 pages.
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Whitaker, J.R. and E.A. Ackerman. 1951. American Resources, Their Management and Conservation. 497 pages. Harcourt Brace, & Co., New York.

Zierer, C.M. 1956. California and the Southwest, a Regional Geography. 376 pages. Wiley and Sons. New York.

mendation of the Conservation Education Service, is authorized to make planning grants to individual school districts, or groups of school districts, or to unified school districts to assist such school districts in determining the feasibility of programs and classes in conservation education and the feasibility of the maintenance of outdoor education camps and projects for such purposes. (Added by Stats. 1968, Ch. 978.)

Instruction in Personal and Public Health and Safety

8503. The adopted course of study shall provide instruction at the appropriate elementary and secondary grade levels and subject areas in personal and public safety and accident prevention; fire prevention; the protection and conservation of resources; and health, including the effects of alcohol, narcotics, drugs, and tobacco upon the human body.

Conservation, Bird, and Arbor Day

5205. March 7th of each year, the anniversary of the birthday of Luther Burbank, is set apart and designated Conservation, Bird, and Arbor Day.

All public schools and educational institutions shall observe Conservation, Bird, and Arbor Day not as a holiday, but by including in the school work of the day, suitable exercises having for their object instruction as to the economic value of birds and trees, and the promotion of a spirit of protection toward them, and as to the economic value of natural resources, and the desirability of their conservation.

A Joint Policy Statement Issued by the

California Department of Education and the Resources Agency

California's abundant, varied and productive natural resources have given its citizens a way of life that is envied worldwide. The successful continuance of this way of life depends basically on how we conserve, manage and utilize the resources that remain.

Such wise management and utilization requires the intelligent cooperation of the enterprising private sector involved in basic utilization of our natural resources and the elements of State government charged by the people with administering the public resources management and protection program.

Basic to this intelligent cooperation is an informed public that understands and is able to make sound judgments as to the continuing quality of the resources management program. To develop an informed public we must depend upon education to provide citizens with a broad understanding of the importance of a balanced resources management program in the State.

It is essential that teachers of the State receive adequate training in the fundamentals of natural resources conservation, and that every student receive careful instruction in this vital subject.

To obtain this objective, we, the Superintendent of Public Instruction and the Administrator of the Resources Agency of California, agree to coordinate our efforts, under the leadership of the Department of Education, in the development of an accelerated program of conservation education in teacher training and in classroom instruction at all levels, designed to have far reaching beneficial effects on the moral, physical and economic status of California's citizens.

Max Rafferty
Superintendent of Public Instruction

N. B. Livermore, Jr.
Administrator of the Resources Agency

July 5, 1967

Studies Completed As A Part Of
The Advisory Committee Project

1. An Analysis of Audio-Visual Materials Relative to Conservation Education.

2. An Analysis of State Adopted Textbooks Relative to Conservation Education Information.

3. California Conservation Education Survey.

4. Evaluated Bibliography of Free and Inexpensive Conservation Publications.

5. Natural and Human Resource Conservation Courses Offered to Prospective Teachers in California.

6. Report on Conservation and Outdoor Science Education in California.

TO THE ADVISORY COMMITTEE ON CONSERVATION EDUCATION

From the California State Board of Education

May 15, 1967

"Man is the only organism that lives by destroying the environment indispensable to his survival" declared William Vogt in 1948. That sounds like a sentence of death.

However, the State Board of Education does not feel hopeless and it has called you together to help us do our part in providing more enlightened attitudes towards the relationship between man and his environment, from the interior of his planet Earth to outer space. More effective instruction in this area will bring into focus modern areas of concern and enable man to make wise choices concerning his total world.

Education must bear its share of the responsibility for the discovery of new ideas and approaches and the implementation of a program broad enough to include a comprehensive study of all those external conditions and influences which man must successfully manage or adjust to if he is to keep man's "house humanly habitable."

As a first step, the Board is asking its Advisory Committee to determine how much of a program of in-service teacher education and dissemination of information about conservation education there has been in the past and how it has been financed -- a status report if you will. Of course the committee should review pertinent documents and findings included in the State Board financed Planning Conference report, the report of the Joint Senate Fact Finding Committees, (1) and the Fourth Progress Report to the Legislature (2).

1. Planning Conference Report: Education and Natural Resources, Report of Joint Hearing, Senate Fact Finding Committee on Natural Resources and Senate Fact Finding Committee on Education on "A Program of Conservation Education for the Department of Education," March 16, 1966.
2. Fourth Progress Report to the Legislature 1967 Regular Session, Senate Permanent Fact Finding Committee on Natural Resources, Section II.

The committee should also review reports and presentations from individuals and organizations concerned, including the Interdepartmental Committee on Conservation Education. It should request and review reports from the Statewide Advisory Committee on Science Education and the State Social Sciences Study Committee on the role of conservation education in the frameworks being prepared.

The Board requests the following lines of inquiry as taken from its planning conference report, that:

(1) An analysis be secured, perhaps by a small ad hoc group, of all state adopted texts relative to the conservation education information therein.

(2) An ad hoc committee with representatives from various industries be asked to prepare a report of available private conservation resources -- perhaps at no cost to the state.

(3) Revised concepts of a position of consultant are needed since they are too restrictive in present forms, not recognizing present trends in education. Since resources will not in the future lie in the hands of one person in the department of education.

(4) The Director of the Resources Agency be requested to prepare a report on their facilities, installations and operations available for in-service training.

(5) Comments be requested from the State Colleges and the University of California on pre-service and in-service teacher training.

(6) A plan be prepared for the cooperative development of in-service workshops using resources of educational, governmental and private institutions, including cost figures and alternative sources of funding.

(7) A plan be proposed for review by this committee for setting up pilot programs in conservation education for observation in various regions of the state, including some description of the cost with alternative funding.

(8) Other recommendations on instruction be reviewed with whatever action is deemed appropriate to support decision making by the board.

(9) The Legislative Analyst be asked to comment further on his ideas and suggestions as reported to the Senate Fact Finding Committee on Natural Resources.

(10) Recommend that available materials be reviewed in detail and accordingly reported on to the State Board of Education.

The State Board is most anxious that the committee evaluate critically and analytically all material prepared for it or presented to members, hoping that they will search widely beyond the usual sources for further information and creative approaches. In the exercise of the committee's responsibility to prepare comments and recommendations for the State Board, it will probably produce reports of findings and recommendations which we may see fit to distribute widely.

In discussing sources of permanent support for carrying on a regular program, the impermanence of Federal funding must be noted and distinction made between carrying out ad hoc tasks of limited duration which are non-repetitious with Federal funds and regular tasks requiring continuing support with state funds. In any case, in line with procedures indicated by the A.D. Little reorganization study of the State Department of Education, we charge the committee to secure complete plans with cost figures attached, clearly stated objectives and designs for evaluating the outcome.

The board is not enthusiastic about endorsing the funding of positions or programs when such are not clearly stated and where provision for evaluating performance and achievement is not made in the form of regular reports to the State Board of Education. If such provisions are made, it will then be possible for the board to report to the Legislature on what actions it has taken to improve conservation education and what will be needed for improved plans in the future.

You should know, as a committee, that the board has allocated in excess of $25,000 during the coming fiscal year, for the support of the committee and the various kinds of ad hoc activities it will engage in, designed to gather the information and make the plans called for in the various recommendations of the Senate Fact Finding Committee and the Asilomar Conference.

With your help, we hope to recognize through the medium of education that man must play a positive role in the development of our ecological system; and to impart to our children the realization that technological progress produces an impact on our civilization which calls increasingly for more enlightened judgment and a greater reverence for life.

CONSERVATION EDUCATION RESOLUTION
Recommended for Adoption by the
California State Board of Education

WHEREAS, The conservation of our basic natural resources and the protection of our human and natural environment are critical issues in California as this state continues to grow at a remarkable rate; and

WHEREAS, Conservation means the wisest use and the most efficient management of all our resources and the protection of our environment for the benefit of the most people for the longest possible time; and

WHEREAS, The initiation and continuation of programs of wise use and efficient management of natural resources and the protection of our environment in the long run, depend upon an informed and educated citizenry; and

WHEREAS, The term "conservation Education" refers to an educational program designed to develop in pupils the proper knowledge, skills and attitudes necessary to enable them to make wise decisions as citizens with regard to the management and protection of our resources and environment; and

WHEREAS, The Legislature and the Governor, through the passage of Senate Bill 1, 1968 session, have required that adopted courses of study shall provide for instruction in conservation and protection of resources and in man's relations to his human and natural environment (Education Code Sections 8503, 8571-b and 8551-c); and

WHEREAS, The Legislature and Governor through the passage of Senate Bill 206, 1968 session have created a Conservation Education Service in the Department of Education to encourage the development of appropriate educational programs, and has authorized the State Superintendent of Public Instruction to make planning grants to local districts to develop local conservation education programs (Education Code Sections 363.5 and 6011.5); and

WHEREAS, A committee representing a broad spectrum of conservation interests was appointed by the State Board of Education to study the status of conservation education and to recommend improvements if needed; and

WHEREAS, This committee has now presented its report to the California State Board of Education,

BE IT RESOLVED:

1. The State Board of Education recognizes the great importance of an effective statewide program of conservation education in all schools and pledges its support and assistance when appropriate for activities at all levels designed to establish, strengthen and improve such programs,

2. That the State Board of Education urge the Department of Education to take all possible steps to implement, with adequate funds and personnel, the role of conservation education leadership morally and legally expected of it,

3. That the Conservation Education Advisory Committee be retained to advise the Board until a permanent statewide committee as specified in Chapter VII of the Committee report can be established.

4. That the Board of Education make the Conservation Education Advisory Committee report available throughout California.

(Adopted by the California State Board of Education November 13, 1969)